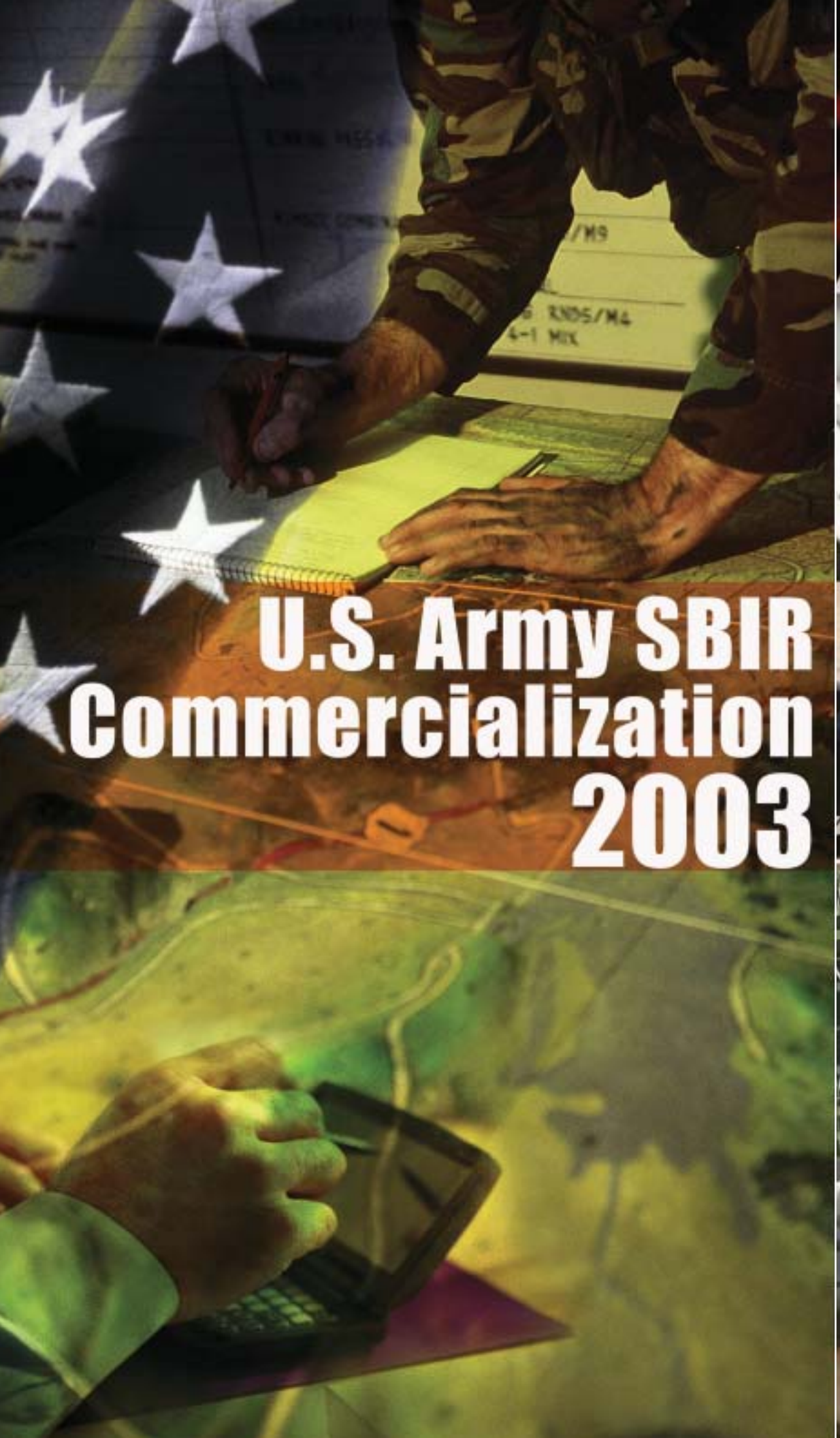


U.S. Army SBIR Commercialization 2003

Future Combat Systems

The Army is undertaking a transformation into a more responsive, deployable, and sustainable force, while maintaining its high levels of lethality, survivability, and versatility. In unveiling this new strategy, GEN Eric Shinseki, Chief of Staff of the Army, stated: "Heavy forces must be more strategically deployable and more agile with a smaller logistical footprint, and light forces must be more lethal, survivable and tactically mobile."

This new force, called the **Objective Force** (**OF**), is intended to meet the full spectrum of present and future Army missions. The cornerstone of the OF capability and the transformation is the **Future Combat Systems** (**FCS**) Program. This reconfigurable, adaptive system of systems will provide a common baseline capability that increases the Army's ability to conduct network/collaboration-centric warfare. The Army is working to develop and demonstrate the first generation of FCS and all its enabling technologies, within this decade. This transformation has had, and will continue to have, a major impact on the entire Army Science and Technology (S&T) enterprise – to include the SBIR Program.

"... small businesses make indispensable contributions to America's economic strength and success. They are a major source of innovation... America's small businesses create a wellspring of new technology, new products, and more effective business procedures."

The Army has a robust Small Business Program, and we are very proud of that fact. Last year, the Army awarded nearly 34 billion dollars to all businesses. Of that amount, small businesses received more than 27 percent – over 9 billion dollars. As we transform America's Army into the Objective Force, we want small businesses to continue to play a major role in our future.

Our Nation's 25 million small businesses make indispensable contributions to America's economic strength and success. They are a major source of innovation. The men and women of America's small businesses create a wellspring of new technology, new products, and more effective business procedures.

This brochure focuses on the tremendous benefits the Army realizes through the Small Business Innovation Research Program. As our Nation's largest source of early-stage technology financing, this program enables hundreds of small businesses to move ideas from drawing boards to the marketplace. Through SBIR and other similar programs, we now know that the best ideas don't necessarily come from the labs of large corporations or even our government labs. Most often, innovative technologies are invented by creative individuals and small, entrepreneurial companies whose workers truly think "outside the box."

The future readiness and effectiveness of our Armed Forces will be determined, in large measure, by our investment in relevant technologies. It is our job to ensure that tomorrow's warfighters are prepared to meet future challenges. Small businesses, such as those highlighted in this brochure, are helping us do that.

Claude M. Bolton, Jr.

Assistant Secretary of the Army
(Acquisition, Logistics and Technology) and
Army Acquisition Executive

Army SBIR

The Small Business Innovation Research Program

Army scientists and engineers develop SBIR solicitation topics that address current and anticipated warfighting technology needs. While the DoD publishes two solicitations annually, the Army participates only in the second, or spring, solicitation. Small businesses participate by submitting proposals for Phase I feasibility demonstrations of their innovative solutions to these topics.

Successful SBIR projects move through three phases. As already mentioned, Phase I is the entry point where a company proves the feasibility of its concept in six months for up to $70,000. An option for up to $50,000 funds interim Phase I-Phase II activities if the project is selected to receive a Phase II award. Phase II is a substantial R&D effort, up to $730,000 over two years, which results in a dual-use technology, product, or service. SBIR is very competitive – about one in ten Phase I and one in three Phase II proposals are selected for award.

Phase III, the commercialization phase, is the goal of every SBIR effort. In Phase III, the successful company markets its dual-use product or service either to the Government, the private sector, or both!

The Army is proud to present to you the following SBIR success stories. They describe some of the benefits that the Army, the small business community, and our Nation have received through this dynamic program.

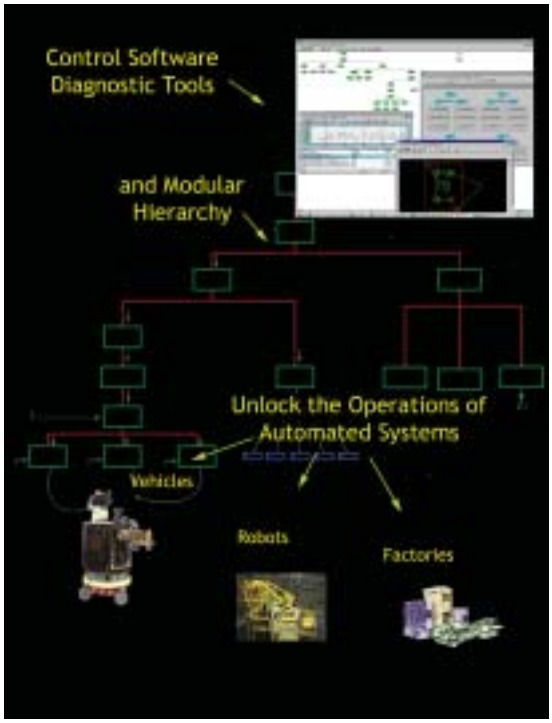

HUMMOCK
SECTOR

Real-Time Control Systems

PHASE III IMPACT

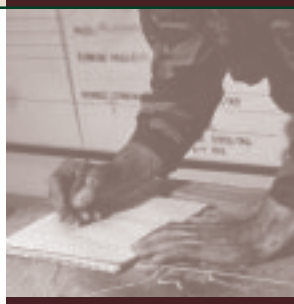
- 763 units sold to date, generating $1,676,344 in sales.
- $750,000 in Government/DoD Research and Development Funds.
- $1,247,000 in Private Research and Development Funds.

Control systems for autonomous hardware, such as those in unmanned air and ground vehicles, are much easier to build with tools that duplicate exactly what is happening in the computer and allow changes in real-time while the system is running. Advanced Technology Research Corporation's (ATR) control system environment and diagnostic toolkit support the Real-time Control System (RCS), designated as the preferred controller methodology for Future Combat Systems autonomous vehicles. ATR's toolkit provides unusually powerful access into complex operations, providing multiple viewpoints to disclose prevailing conditions in plain terms, and in 3-D graphic displays. This environment increases a developer's effectiveness, allowing smaller development teams and faster turnaround of reliable automated systems. Results have been applied to a wide diversity of systems, including unmanned aircraft, unmanned vehicles, robot welders, machinery prognostics, factory automation, postal material handling, multi-axis machine tools, plasma arc cutters, water jet cutters, laser welders, and factory cell control. RCS diagnostic tools and engineering methods accelerate and clarify control software development throughout its lifecycle.



Self-Deploying, Lightweight Tactical Tent

Federal Fabrics-Fibers has developed a revolutionary AirBeam® structural support for temporary shelters and a self-deploying AirBeams® shelter tent. The basic shelter, consisting of two modules, can be erected in 10 minutes without any tools and provides a 20' x 24' inhabitable area with a 10' inner height. The shelter is completely modular in 12-foot sections, providing the user with the option of easily adjusting the shelter length based on the tactical situation. The shelter is extremely lightweight, can be stowed in a small cube at a packing density of 5lb/ft-cu, has an expansion ratio of 38 times, and uses flame-resistant, double-wall construction material. The unique vented double-walled skin reduces the environmental control unit heating and cooling workloads by approximately 50% over a single skinned shelter and can withstand high wind and snow loads. A Chemical/Biological shelter based on this technology is in the early design and performance stages of development and shows great promise.



PHASE III IMPACT

- 157 AirBeam® sets and 6 complete units sold to date, generating $3,150,000 in sales.
- One patent issued to date.
- $600,000 in Government/DoD Research and Development Funds.
- $1 million in Government/DoD Research and Development Funds allocated to render the shelter protective against Chemical and Biological Agents.
- This current AirBeam® Program will save the Army Acquisition Objective (AAO) $22.5 million.
- Recipient of the Army SBIR Quality Award, Tibbetts Award, and Hammer Award.

Custom Microelectronic Systems, Inc., Northport, AL

Sponsored by the U.S. Army Research Laboratory

Fiber-Optic Early Warning System

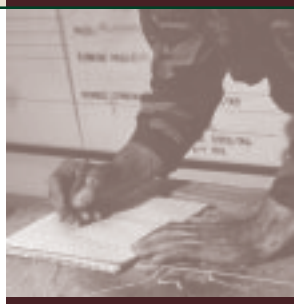
PHASE III IMPACT

- 25 units sold to date, generating $1,837,266 in sales.
- Anticipate sales of over $97.5 million by delivering up to 1500 fiber-optic delay units for the AIEWS Program.

Advances in fiber-optic and Monolithic Microwave Integrated Circuit (MMIC) technologies have made fiber-optic delay lines a viable alternative to the traditional methods of microwave signal delay for improved dynamic range, signal linearity, power consumption, physical size, noise performance, and ruggedness. As a result of its Army Phase II SBIR project, Custom Microelectronic Systems, Inc. (CMS) has developed an integral component for the Navy's Advanced Integrated Electronic Warfare System (AIEWS) involving the delay of microwave signals from 2 to 6 GHz. The custom modules developed by CMS support three channels of 3000 nsecs delay each in a very compact, easily replaced assembly. AIEWS is a new low noise, high performance early warning detection system that is being developed by Lockheed Martin for the U.S. Navy. The AIEWS system could be installed on over 150 ships over a program life of 20 years for a total program value well in excess of one billion dollars. The initial research and development contract was to deliver 20 fiber-optic delay lines for the development of two complete demonstration systems.

Fiber-optic delay lines with these performance capabilities may also find application in radar warning receivers, moving target indication radars, timing control for multiple antenna systems, path delay simulations in radar and communications systems, and phase-noise discrimination measurement systems.

Parachute Automatic Opening Device



PHASE III IMPACT

- $300,000 Research and Development funds from Natick Soldier Center.
- Cybernet Systems AOD will be a Pre-Planned Product Improvement (P3I) for the Advanced Tactical Parachute System (ATPS) program.

When a military parachute malfunctions, it is critical that the paratrooper deploys the reserve parachute quickly to ensure that the canopy has adequate time to inflate and slow his descent. While there are commercial Automatic Opening Devices (AOD) used by recreational skydivers, such devices currently do not exist for military static line jumpers who often perform parachute jumps from as low as 800 feet, leaving very little time for the jumper to react to a malfunction. There are also instances where a paratrooper may become incapacitated or unconscious and unable to activate the reserve to ensure a safe landing. Cybernet Systems Corporation has developed an AOD for military purposes.

The payoff of such a device for military parachute jumpers includes the potential prevention of 1-2 static line parachute fatalities per year, as well as the probable elimination of training-related incidents caused by broken static lines and total canopy malfunctions.

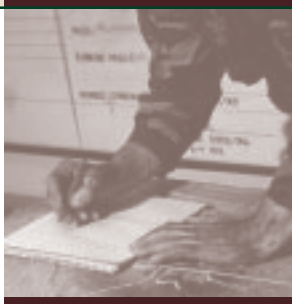
Low Cost, PC-Based Real-Time Dynamic Terrain

PHASE III IMPACT

- $1,240,673 in Research and Development funds.
- DVC has signed an agreement with Multigen Paradigm to provide run-time and development software for their Dynamic Terrain core product for the new release of Vega Prime. This agreement is expected to generate a potential $4.2 million for DVC over the next five years.
- Other commercial software image generation run-time providers like SGI, CG2, and Q3D are taking strong interest in DVC's ability to offer the Dynamic Terrain core software product to enhance their offerings. DVC intends to establish similar relationships with these and other third party suppliers and will most likely extend sales of the Dynamic Terrain core product by another $4.2 million.

Realistic terrain dynamics is a requirement for training future Objective Force maneuver forces in a synthetic environment. Terrain dynamics, which includes mine breaching, defensive positioning, bomb damage, building damage, vehicle dynamics, soil dynamics, mobility, soil plowing, flood effects, and varying soil surfaces, enhances the quality of command decisions that rely on this critical input from a virtual environment. The Army's terrain dynamics needs of the Combined Arms Tactical Trainer, Family of Simulations, and the Maneuver Support Battle Laboratory are different, yet contain similar requirements. Diamond Visionics met and exceeded these requirements with its Dynamic Terrain core product that allows real-time performance of deformed terrain during run-time of the synthetic environment, the ability to change the terrain anywhere in the database, and operates on a low cost PC-based system for optimal utilization. The terrain changes are communicated to several networked PC-based systems and the terrain reflects changes made by a remote originator. Diamond Visionics developed this product originally through a medical simulation technology which can deform soft body tissue, real-time on a PC.

Electro-Optic Fabrics for the Future Warrior



Foster-Miller has developed and integrated network devices into wearable soldier garments, and fabricated and successfully demonstrated narrow, flexible electro-optic buses with overmolded end connectors that can be applied to existing garments to act as a personal area network. Other textile cable successes include an advanced electro-optic webbing for a body-borne antenna system. Ongoing work is providing fully functional textile networks to support the Scorpion and Objective Force Warrior soldier garments and is developing a textile network tactor suit to address pilot disorientation. Foster-Miller is focused on the materials and ergonomic issues associated with providing effective connections and networks, while also meeting the demanding durability and comfort requirements of its military and industrial customers.

One of these commercial products – the Malden Mills Polartec Heat® blanket – is a new electric blanket system which looks and feels like soft Polartec® fleece, but hidden inside are tiny fiber heating elements. Foster-Miller provided the textile network power bus and connections to the elements for this product.

PHASE III IMPACT

- Using this technology developed by Foster-Miller, Malden Mills sold 17,000 blankets generating over $3,383,000 in sales.
- Nearly $1 million in commercial and Government Research and Development funds.
- Foster-Miller is also providing textile networks for developing products at Xybernaut, Technology Enabled Clothing (TEC), several foreign militaries, and more than 10 private commercial customers.

Kigre, Inc., Hilton Head, SC

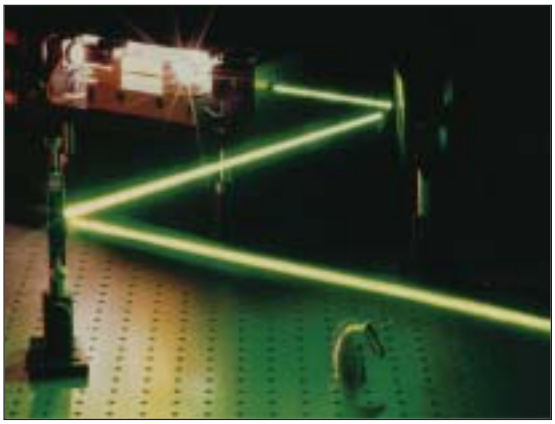
Sponsored by the U.S. Army Armaments Research, Development and Engineering Center

Cannon Laser Igniter

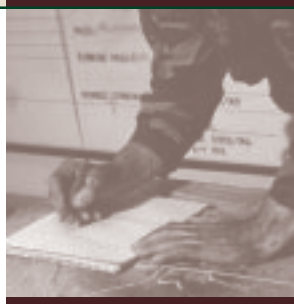
PHASE III IMPACT

- 20 units sold to date, generating $2 million in sales.
- $1 million in non-DoD and Government/DoD Research and Development funds.

Kigre, Inc. has developed a very unique laser igniter system to ensure a more efficient and lethal armament system for Objective Force cannons. As the primary igniter for the cannon, the Breech Mounted Laser ignites the propelling charge to begin the ballistic cycle. Traditional 155mm Howitzers are ignited with a brass cartridge case containing pyrotechnic material which is inserted and removed each time the cannon fires a projectile. The laser replaces the brass cartridge as the primary igniter of the cannon by directly irradiating the basepad of the propelling charge. Characteristics include cannon firing rates up to 15 shots per minute, direct laser path to propellant charge, rugged solid-state laser design with variable energy and pulse width capability. The laser replaces the brass cartridge as the primary igniter of the cannon. This feature reduces resupply requirements and eliminates environmental waste.



Support for Portable Power Systems



Increasing use of electronic equipment has caused the Army to consume large quantities of single-use batteries which generate extraordinary acquisition and disposal costs. Portable fuel battery chargers could make use of rechargeable batteries in the field possible. Many technologies being considered for portable generators, including fuel cells, miniature internal combustion engines, and direct energy conversion techniques, face common problems in pumping, atomizing, and controlling very small fuel flows – in some cases as low as 6 grams/hour. Early prototype generators used fuel supply systems as large and heavy as the generators themselves. Mesoscopic Devices has developed miniature pumps and atomizers that enable compact battery chargers by efficiently providing very small fuel flow rates in highly compact packages.

Miniature generators using this Army SBIR technology would be up to ten times lighter than the single-use batteries they replace. The components also support portable power systems, including fuel cells, miniature diesel engines, and other advanced generators needed in Future Combat Systems.

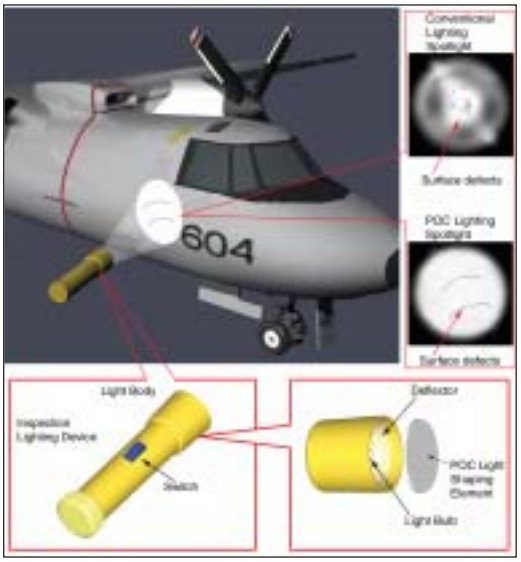
PHASE III IMPACT

- 5 units sold to date, generating over $80,000 in sales.
- $1,757,497 in DoD and commercial Research and Development funds.
- Army SBIR Quality Award winner.
- Five teams in the DARPA "Palm Power" are currently using these fuel supply system components.

Passive Light-Shaping Elements

PHASE III IMPACT

- Over 425,000 units sold to date, generating more than $870,000 in sales.
- $2,591,000 in commercial and Government/DoD Research and Development funding.
- ISO-9001 certified production, with sales in the U.S. and Asia.



Physical Optics Corporation (POC) developed a new technology for manufacturing passive optical components that can perform spectral and angular redistribution of energy carried by wavefronts of coherent and partially coherent radiation. These components are fabricated using holographic techniques involving laser recording of submicron diffraction and interference patterns in photosensitive materials. Their design includes features based on statistical properties of radiation. In particular, this technology provided a foundation for a family of Passive Light-Shaping Elements (PLSE) which can be mass-replicated at low cost. These components have been a gateway for POC's entry into the lighting and nondestructive evaluation (NDE) markets. They have also found important applications in high power laser optics, countermeasures, and optical sensing. PLSEs allow to achieve energy efficient, angularly limited, fully homogenous outputs from nonuniform distributed light sources. They have been found critical for aircraft inspection lighting. This is because currently 80% of all aircraft are inspected visually with special handheld flashlights, which produce irregular illumination, with multiple dark/bright spots. This leads to frequent inspection errors because the user has to repeatedly scan the beam to make out details. POC's PLSE dramatically improves output beam quality, eliminating glare and hot spots entirely. These advantages of PLSE products were confirmed by an extensive field study performed in collaboration with Ross Aviation, Albuquerque, NM, and Mesa Airlines, Farmington, NM, with the participation of inspectors from the American Airlines Maintenance and Engineering Center in Tulsa, OK, and the Air Transport Association Nondestructive Testing Forum. These tests demonstrated that these POC products strongly improve inspection accuracy, which is critical for national security and transportation safety. This project made an important contribution to POC development of mass-production capabilities in holography, and to commercialization of products now in use on military bases and by many customers around the world.

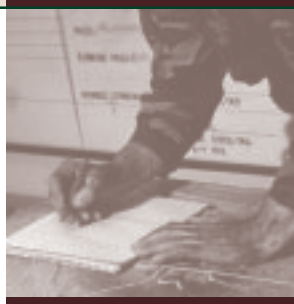
Inspection Lighting Device with POC's Light Shaping Element

A Nested, High Voltage Generator

The Nested High Voltage Generator (NHVG) is a high voltage accelerator/power supply topology that can potentially satisfy a variety of requirements for a compact, reliable inexpensive DC accelerator in the 0.25 - 10 MeV range. Applications for this technology include the generation of high voltage, high current pulsed electron beams for microwave generation, medical product sterilization, polymer curing, wastewater sterilization, wastewater remediation, medical waste sterilization, and use in X-ray imaging equipment. This technology has recently been demonstrated in an accelerator which has operated at 500 kV with an electron beam in a 36-inch long, 17-inch diameter device.

The size, weight, shielding, and cost of electron accelerators has often limited their applicability in production line applications. The mini accelerator, produced as a result of NHVG technology, reduces all system costs, but most importantly, makes it possible for the system to fit in a small space. Utilizing this technology, the 1.15 MeV Electron Accelerator for X-ray Scanning A 0.6 ma, 1.15 MeV has been built under contract with AnnisTech for X-ray imaging. This machine is being used at a U.S. airport. The beam spot size is < 2mm at the entrance and < 4mm after the 4-meter scan. This is connected to the largest electron beam scanner ever built (3 meters).

The NHVG has been demonstrated to be both versatile and useful. To date, with a number of accelerators tested and many hundreds of hours of run-time, North Star Research has experienced no problems with dielectric or other component breakdown. The NHVG principle will allow a new class of inexpensive DC accelerators to be used in a variety of industrial and research applications.



PHASE III IMPACT

- 4 units sold to date, generating over $3 million in sales.
- The NHVG has made it possible to fit a 1 MeV capability for security inspection applications into an airport cargo facility.

Scientific Systems Company, Inc., Woburn, MA

Sponsored by the U.S. Army Communications-Electronics Command

Non-Metallic Landmine Detection Software

PHASE III IMPACT

- $663,000 in Government/DoD Research and Development funding.
- Product is currently being evaluated by U.S. Army CECOM and CyTerra for further development.

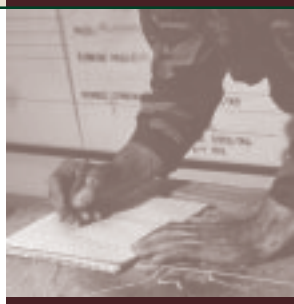
The proliferation of non-metallic landmines worldwide requires new sensor technologies and sophisticated signal processing and recognition techniques to be an effective countermine system for deployed forces. Scientific Systems Company, Inc. has developed an Automatic Mine Detection software tool so operators can positively identify landmines to address this critical need. This tool uses sophisticated object recognition techniques to automatically isolate anomalous objects to alert the operator. It has the ability to adapt itself to diverse environments and operating conditions since detectors could potentially be used under unexpected conditions in any part of the world. Hardware upgrades can be accomplished independently of the software tool, which enables hardware manufactures that utilize the product to easily integrate the tool into their systems.

Photrodes™ for Medical Monitoring

Srico has developed innovative, optical sensors (Photrodes™) for electrocardiogram (EKG) and electroencephalogram (EEG) monitoring. The key operational component of the sensor device is a miniature, specially designed optical chip. While electronic chips use electrical current (electrons) optical chips use light (photons) for measurement and transmission of signals. Photrodes™ play the same role as electrodes – to detect and communicate brain or heart activity to the EEG or EKG recording device. However, the Photrodes™ measure the electrical activity of the heart or brain using state-of-the-art optical voltage sensing technology. They may also be used for electromyography (EMG) and electrooculography (EOG).

To measure heart rate (EKG), the small sensor is placed over the person's clothing enabling emergency medical personnel to make a quick patient assessment, particularly at scenes of mass trauma. As an EEG sensor, it may be used in situations where attaching a suite of conventional electrodes to the scalp with sticky gels would be uncomfortable, inconvenient, or time-consuming, such as for ambulatory monitoring, anesthesia awareness monitoring, alertness monitoring, sleep studies, pediatric monitoring, and emergency or critical medicine. The Photrodes™ eliminate the need for troublesome electrode attachment, and the sensor probe does not require exacting physical contact. Motion, skin moisture, and other characteristics typical of non-laboratory environments do not affect the Photrode™ device.

The Photrode™ technology is especially well suited in functional magnetic resonance imaging (fMRI) of the heart or brain. Because there are no electrical or electronic components inside the magnet room, there is no interference with the RF and magnetic fields of the scanner and no burn risk to the patient. Combined with fMRI, Photrodes™ have the potential to open the door to new brain and heart research, neurodiagnostics, and cardiodiagnostics. The all-optical technology offers uninterrupted, truly artifact-free capture of heart or brain activity.



PHASE III IMPACT

- 1 unit sold to date, generating $87,000 in sales.
- $1,050,000 in Government/DoD and non-DoD Research and Development funds.
- 2002 R&D-100 Award for one of the 100 most innovative products of the year.

Vertigo, Inc., Lake Elsinore, CA

Sponsored by the U.S. Army Natick Soldier Center

Aviation Inflatable Maintenance Shelter

PHASE III IMPACT

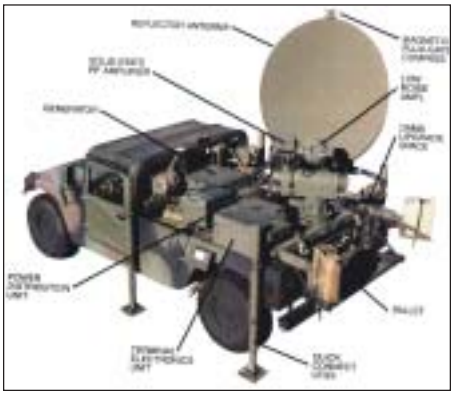
- $2,974,236 in Government/DoD and non-DoD Research and Development funds.
- As a result of the AIMS prototype, other U.S. allies are evaluating the AIMS for their deployment needs.
- Smaller versions of this high pressure air beam have now been developed and distribution began in September 2002.

The Army must support military forces anywhere in the world with shelters that can be rapidly deployed with existing soldier skills and require a minimum of airlift. Vertigo, Inc. demonstrated that very large, lightweight, rapidly deploying shelters are possible. This project was a technology demonstration of the use of large diameter air beams to fabricate a prototype aircraft maintenance hanger large enough to house a CH-47 helicopter. The Aviation Inflatable Maintenance Shelter (AIMS) is the largest air beam structure ever fabricated and achieved a technology breakthrough in the size and load capacity of inflatable structures.

The shelter can be deployed by eight soldiers, inflates in less than an hour, and can withstand steady winds up to 90 miles per hour and snow loads of 20 pounds per square foot. The shelter has aircraft doors at each end that open or close in less than 3 minutes.

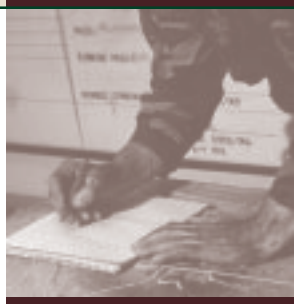
This project was the first use of air beams of this size. Prior to this project, air beam shelters with spans greater than 30 feet were not feasible. The AIMS span of 83 feet is a revolutionary development. Each air beam weighs 500 pounds, but can support over 20,000 pounds, which is an excellent load to weight ratio.

Error Correction for Satellite Communications



When information is transmitted over a communications channel, some of the information bits may be lost or corrupted due to noise. Xenotran's error correction system utilizes a technique commonly referred to as "turbo coding." Turbo coding involves coding the transmitted signal in such a way that if bits are lost from the message during communication, they can be recovered with a high degree of certainty.

Many coding techniques have been developed, but the merit of any one is measured by its efficiency. A simple low efficiency scheme would be to repeatedly send the same message and vote on the correct version. This consumes too much time and bandwidth. The trick is to use a coding scheme that maintains a high probability that the message is correct, but uses the minimum of time and bandwidth. In 1948, Claude Shannon at Bell Telephone Laboratories derived a theoretical limit for the amount of information that could be sent over a channel and the merit of communications schemes are now measured against this limit. The Xenotran implementation is the closest yet and comes within less than a decibel of the Shannon limit for a coded signal. The turbo coder will allow twice as much information to be sent over a communication channel compared with the earlier coding schemes.



PHASE III IMPACT

- 2 units sold to date, generating over $78,000 in sales.
- Received a subcontract from Raytheon for development of the SMART-T satellite equipment for the Army.
- Received $373,659 from Raytheon to develop its Turbo Coder Technology.
- The U.S. Army has committed to use the Xenotran turbo coder in future Advanced Extremely High Frequency satellite communications equipment.

Yankee Scientific, Inc., Medfield, MA

Sponsored by the U.S. Army Natick Soldier Center

Water Heater for Military Field Kitchens

PHASE III IMPACT

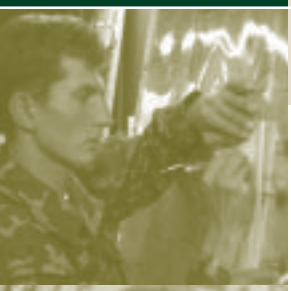
- The contract issued by the U.S. Army calls for 2400 Advanced Field Sanitation Centers in which the Yankee water heater is an integral component. The estimated cost is $5,000 per system. Over the 10 year delivery period, this represents $12,000,000 in sales.

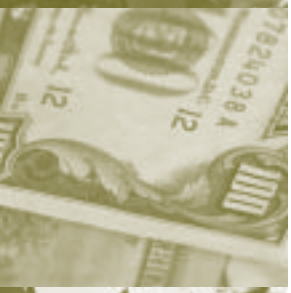
Up to this time, the only practical way to produce on-demand and pressurized hot water for Army tactical field kitchens was with a pump. Since power for a pump is a scarce commodity in the field, a unique water heater was developed by Yankee Scientific. It generates its own electrical power to drive a pump to deliver pressure while simultaneously heating the water. This is accomplished with thermoelectric modules that are heated by the combustion gases from a standard burner and are cooled by the flow of water through the apparatus. In addition, the water heater produces low-pressure steam. When the steam is injected into sinks filled with cold water, it condenses and heats the water very efficiently. This non-powered water heater is the result of combining the latest manufacturing methods and materials with simple and basic thermodynamic technologies. The water heater that is the centerpiece of the Army's new Advanced Field Sanitation Center incorporates most of the features and technology advancements that were developed under the initial SBIR award.

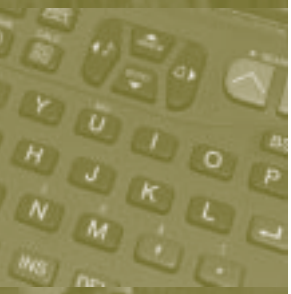
Opportunities

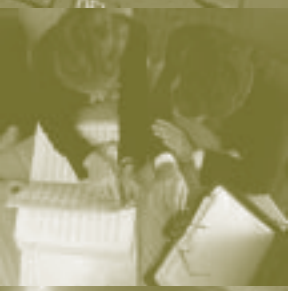
Army STTR

The Small Business Technology Transfer Program









The Small Business Technology Transfer (STTR) Program funds innovative technologies developed by small businesses partnering with universities, federally-funded research and development centers (FFRDCs), and other non-profit research institutions. Congress established STTR in 1994 as a companion program to SBIR. It is currently authorized through FY 2009. STTR shares the SBIR Program's objectives and processes with a few important differences:

- STTR provides an incentive for small businesses and researchers to move emerging technologies from the laboratory to the marketplace.
- STTR Phase I efforts can be up to one year in duration, for a maximum of $100,000.
- STTR Phase II efforts are two-year efforts for up to $500,000.

The U.S. Army Research Office (ARO) is the lead execution agent for the Army STTR Program by virtue of its broad basic research mission within the Army. ARO has developed numerous strategic partnerships with industry and academia to develop new technologies with applications in future Army systems. ARO manages and executes the Army STTR Program while maintaining the dual-use focus mandated by Congress.

Participating in Army STTR

For more information about the Army STTR Program, including upcoming opportunities for participating in the program, visit the Army STTR Web Site at:
http://www.aro.army.mil/arowash/rt

DoD CBD

The Chemical and Biological Defense Program

The DoD CBD Program was established in response to recent world events which caused intense interest in the readiness and effectiveness of U.S. Chemical and Biological warfare defenses. The DoD CBD Program enables U.S. forces to survive, fight, and win in chemical and biological warfare environments. This requires aggressive, realistic training and the finest equipment available to allow soldiers to avoid contamination, if possible, and to protect, decontaminate, and sustain operations.

The DoD CBD SBIR Program seeks to transfer innovative CBD technologies between the Services/Special Operations Command (SOCOM) and the private sector for mutual benefit. The objective is to develop technologies for detection, identification, protection, and decontamination of chemical and biological agents.

- **Detection** includes both stand-off and point detection of agents in air, water, and soil, as well as in complex media such as food.
- **Identification** includes molecular techniques for the rapid identification of CB agents for forensics purposes.
- **Protection** encompasses all areas of non-medical individual and collective protection, including CB hardening of buildings and facilities.
- **Decontamination** focuses on non-corrosive, environmentally benign processes that can be used on equipment, weapons platforms, and personnel.

Application of CBD technologies will be on battlefield force protection, homeland defense, and treaty compliance and verification. This includes technologies that maximize a strong defensive posture using passive or active means as deterrents.

As the lead agency, the Army coordinates DoD-wide topic generation; receipt, evaluation, selection, and award of Phase I proposals; and potential follow-on Phase II efforts under this program.

To learn more about the DoD CBD SBIR Program, please visit the ARO Web Site at:
http://www.aro.army.mil/arowash/rt

SBIR Phase II Quality Awards

A panel of Army and industry experts select outstanding Phase II projects each year to receive Army SBIR Phase II Quality Awards. These awardees best exemplify the SBIR goal of developing innovative technologies and products, and moving them into the marketplace.

The Quality Awards competition is open to all companies whose Army SBIR Phase II projects conclude in a given fiscal year. Winners are selected based on three criteria:

- Originality and degree of innovation represented in their research
- Relevance of the research to an Army mission
- Immediate commercialization potential of the technology or product

The Army Research Office-Washington executes the awards program each year. Award plaques are presented to the SBIR companies as well as their sponsoring Army organizations. These outstanding projects also receive recognition in an SBIR Phase II Quality Awards brochure, which the Army distributes at conferences and other meetings in which the Army SBIR Program participates. This extra exposure provides additional marketing opportunities for the awardees within the Army, the Department of Defense, and the private sector.

The 2002 Phase II Quality Award Winners

Fuel Supply for Portable Power
Mesoscopic Devices, LLC
U.S. Army Research Office

Secure, Distributed Decision Aids
Architecture Technology Corporation
U.S. Army Communications-Electronics Command

Mobile Frequency Hopping Communication System
TrellisWare Technologies, Inc.
U.S. Army Research Laboratory

Snow Probe
Capacitec, Inc.
U.S. Army Research Office

Nuclear Battery
TRACE Photonics, Inc.
U.S. Army Armaments Research, Development & Engineering Center

Missile Design Thermal Analysis
Mesa Associates, Inc.
U.S. Army Missile Research, Development & Engineering Center

2001

Electromagnetic Interference Shielding
Ormet Circuits, Inc.
U.S. Army Space & Missile Defense Command

Barrel Armor
TPL, Inc.
U.S. Army Research Office

Increased Power
Lynntech, Inc.
U.S. Army Research Laboratory

Site-Specific Radio Communication
Remson, Inc.
U.S. Army Research Office

High Resolution Micro-Display
eMagin Corporation
U.S. Army Communications-Electronics RD&E Center

Past Quality Award Winners

2000

Student-Centered Learning System
Farance, Inc.
U.S. Army Communications-Electronics RD&E Center

Rapid, Effective Malaria Test
Flow, Inc.
Walter Reed Army Institute of Research

Smart Armor Structures
Production Products Manufacturing & Sales Inc.
U.S. Army Research Laboratory

Computer-Aided Design
ThermoAnalytics, Inc.
U.S. Army Research Laboratory

Better Communications
Cree, Inc.
U.S. Army Research Laboratory

Night Driving Simulator
DCS Corporation
U.S. Army Simulation, Training and Instrumentation Command

Detection of Mosquito-Borne Pathogens
Medical Analysis Systems, Inc.
Walter Reed Army Institute of Research

High-Speed Munitions Inspection
Skiametrics, Inc.
U.S. Army Armaments RD&E Center

1999

Single Antenna Feed, Multiple Band Satellite Communications
Austin Info Systems, Inc.
U.S. Army Communications-Electronics Command RD&E Center

Remote Triage Sensors
Empirical Technologies Corporation
U.S. Army Medical Research and Materiel Command

Improved Decision-Making Training Aids
Cognitive Technologies, Inc.
U.S. Army Research Institute

Lightweight Digital Display Screen
Diamond Visionics, LLC
U.S. Army Simulation, Training and Instrumentation Command

Pressurized Airbeams
Federal Fabrics-Fibers, Inc.
U.S. Army Natick Soldier Center

1998

Two Color Per Pixel Staring Focal Plane Array
Amain Electronics Company, Inc.
U.S. Army Communications-Electronics Command RD&E Center

Extremely Lightweight Fuel Cell Stacks
Analytic Power Corporation
U.S. Army Research Laboratory

Lightweight Monopolar Fuel Cells
Lynntech, Inc.
U.S. Army Research Laboratory

Self-Correcting Neural Sensor Fusion
Physical Optics Corporation
U.S. Army Missile RD&E Center

Feature-Based Rapid Map Generation System
Vexcel Corporation
U.S. Army Topographic Engineering Center

1997

Security Using Automated Speech Recognition
Daniel H. Wagner Associates, Inc.
U.S. Army Armaments RD&E Center

Unmanned Aerial Vehicle Guided Landing
Focused Energy Holding Company
U.S. Army Missile RD&E Center

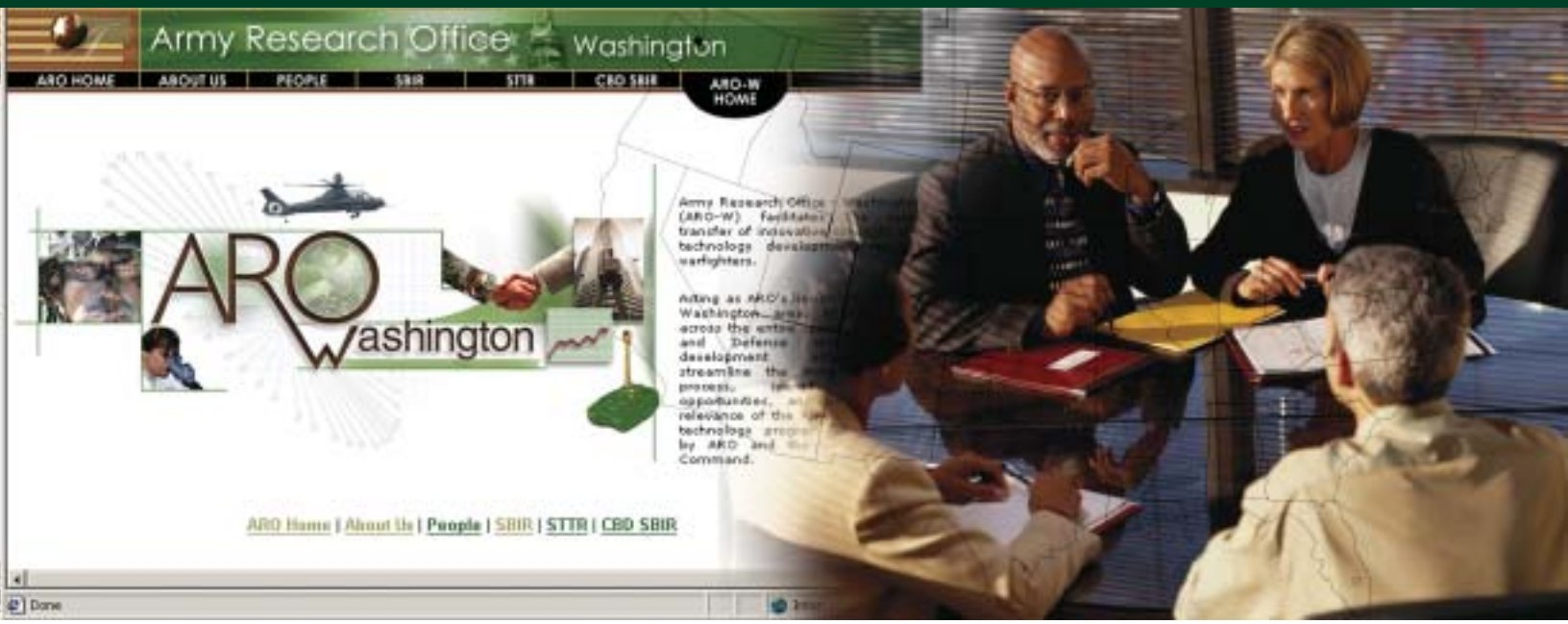
Advanced Engine Protection
InnovaTech, Inc.
U.S. Army Missile RD&E Center

Wear Resistant Coatings
Materials Resources, Inc.
U.S. Army Tank Automotive RD&E Center

Self-Heating Foods
TDA Research, Inc.
U.S. Army Natick Soldier Center

Outreach and Sources of Information

http://www.aro.army.mil/arowash/rt



The Army SBIR/STTR Program conducts an aggressive outreach program to increase small business awareness of broad opportunities provided by the Army. Army SBIR personnel participate in national, regional, and local conferences across the country. This provides small businesses with face-to-face contact with people who are knowledgeable about Army needs and the SBIR/STTR process. The Army SBIR Web Site identifies upcoming events at which the Army will be participating.

The Army SBIR/STTR Web Site provides online access to comprehensive information about the Program:

- General Information (on participating in the Program)
- Changes and New Requirements
- Points of Contact and Links (to other Army programs and related SBIR sites)
- Proposal Submission (procedures and entry points)
- Recent Army SBIR Awards
- Searchable Database of Past Awards
- Chemical-Biological Defense SBIR Program (Joint Army/Navy/Air Force/SOCOM)
- Phase III Success Stories
- Phase II Quality Awards Program

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